UCRL-JC-120760 Abs

ENERGETICS OF GAS-FILLED HOHLRAUMS

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Advanced hohlraum designs for ICF include the use of a low-density ($n<0.1n_c$) plasma, or tamper, to impede the motion of the high-Z hohlraum wall material. The purpose of this tamper is to minimize the motion of the laser deposition region caused by refraction of the laser beam in the plasma resulting from the ablated wall material as well as the time-dependent position of the laser deposition region as the critical density region moves into the hohlraum. This motion of the laser deposition region inside the hohlraum can affect the drive symmetry. We are investigating the effect of the tamper on the energetics of the hohlraum by measuring the time dependent drive inside the hohlraum for different hohlraum configurations and gas fills. To account for the over-all energy balance, we measure the scattered laser light and subtract this from the incident laser energy to model the hohlraum performance. We find that the tamped-hohlraum temperature is reduced about 5 to 10% due to the energy expended in ionizing and heating the tamping material.

This work was performed under the auspices of the U. S. Department of Energy by Lawrence Livermore National Laboratory under contract W-7405-ENG-48